

Gastric Metastasis from Invasive Lobular Breast Cancer, Resembling Primary Gastric Cancer

Hasnain Dilawar, Akhtar Ahmed, Salman Habib, Javaid Iqbal, Talal Abdul Rehman, Imran Hadi, Noor Nisa, and Shazia Fatima

Department of Nuclear Medicine and Molecular Imaging, Karachi Institute of Radiotherapy and Nuclear Medicine, Karachi, Pakistan

Invasive lobular carcinoma (ILC) is the second most common subtype of invasive breast cancer and sometimes presents with an unusual metastatic pattern. Its gastric metastasis is difficult to differentiate from primary adenocarcinoma. This report presents a case of breast ILC for which the initial presentation was gastric metastasis. A 62-y-old woman presented with gastric outlet obstruction secondary to a gastric mass that had been diagnosed on upper gastrointestinal endoscopy and biopsy. The patient had been referred for ^{18}F -FDG PET/CT for staging. The baseline ^{18}F -FDG PET/CT scan demonstrated extensive axillary nodal and gastric metastases with a breast mass, which raised suspicion of a primary breast carcinoma. Distinguishing primary gastric adenocarcinoma from metastatic breast ILC is essential, considering that the 2 diagnoses lead to divergent treatments. Therefore, this entity needs to be considered in the differential diagnosis in clinical practice.

Key Words: gastric metastasis; ^{18}F -FDG PET/CT; lobular breast carcinoma; primary gastric carcinoma

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Breast carcinoma is the most common malignancy in women, accounting for 25.1% of all cancers in women and being the leading cause of cancer-related death among women worldwide (1). Despite early recognition by screening and the efficacy of new treatment modalities, many patients eventually develop metastatic disease either by locoregional recurrence or distant metastases. Metastatic disease to the gastrointestinal tract is rare and poses a clinical problem in both diagnosis and management. The primary malignancies that most commonly metastasize to the stomach include breast cancer (27.9%), lung cancer (23.8%), esophageal carcinoma (19.1%), renal cell carcinoma (7.6%), and malignant melanoma (7.0%) (2).

Based on clinical and autopsy findings, the reported incidence of gastric metastasis is 0.2%–0.7%. The postmortem frequency of gastric metastasis from breast carcinoma is

estimated to be 0.8%–18%. Most cases originate from invasive lobular carcinoma (ILC) (3).

According to the National Comprehensive Cancer Network 2018 guidelines, ^{18}F -FDG PET/CT may be performed as an alternative to a contrast-enhanced CT scan of the chest, abdomen, and pelvis and $^{99\text{m}}\text{Tc}$ -methylene diphosphonate bone scanning for evaluation of distant metastatic disease in patients with newly diagnosed stage III breast cancer. ^{18}F -FDG PET/CT is usually not performed for stage I or stage II breast cancer because a change in patient management is rare (4). ^{18}F -FDG PET/CT may be more appropriate as an alternative to CT and bone scanning for patients with invasive ductal carcinoma rather than ILC, because ^{18}F -FDG demonstrates comparatively reduced sensitivity for ILC metastases (5). Compared with invasive ductal carcinoma, ILC is more often occult on mammography, ultrasound, and ^{18}F -FDG PET/CT, which is of importance for clinical management because ILC is more often multifocal and bilateral than invasive ductal carcinoma (6).

CASE REPORT

A 62-y-old woman presented with gastrointestinal symptoms including abdominal swelling, loss of appetite, dysphagia, and gastroesophageal reflux, which had developed over a 20-d period. A contrast-enhanced CT scan of the abdomen was done and revealed circumferential polypoidal thickening involving the pyloric and antral parts of the stomach, with fat stranding. It was associated with a distended body and fundus of the stomach, findings highly suggestive of a neoplastic lesion with partial gastric outlet obstruction. The patient underwent upper gastrointestinal endoscopy, which demonstrated a thickened, hard gastric mucosa involving predominantly the distal two thirds of the gastric body with pyloric narrowing, suggestive of gastric outlet obstruction with severe distal diffuse esophagitis. An initial histopathologic study revealed a small focus of infiltrating carcinoma. PET/CT showed ^{18}F -FDG-avid circumferential mural thickening of the antrum and pylorus along with hypermetabolic lymphadenopathy involving the right axillary and mediastinal lymph nodes, the porta hepatis, and widespread bone lesions (Fig. 1A). PET/CT also showed a nonavid soft-tissue-density nodule with slightly speculated margins in the superolateral quadrant of the right

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For correspondence or reprints, contact Hasnain Dilawar (hasnaindilawar@hotmail.com).
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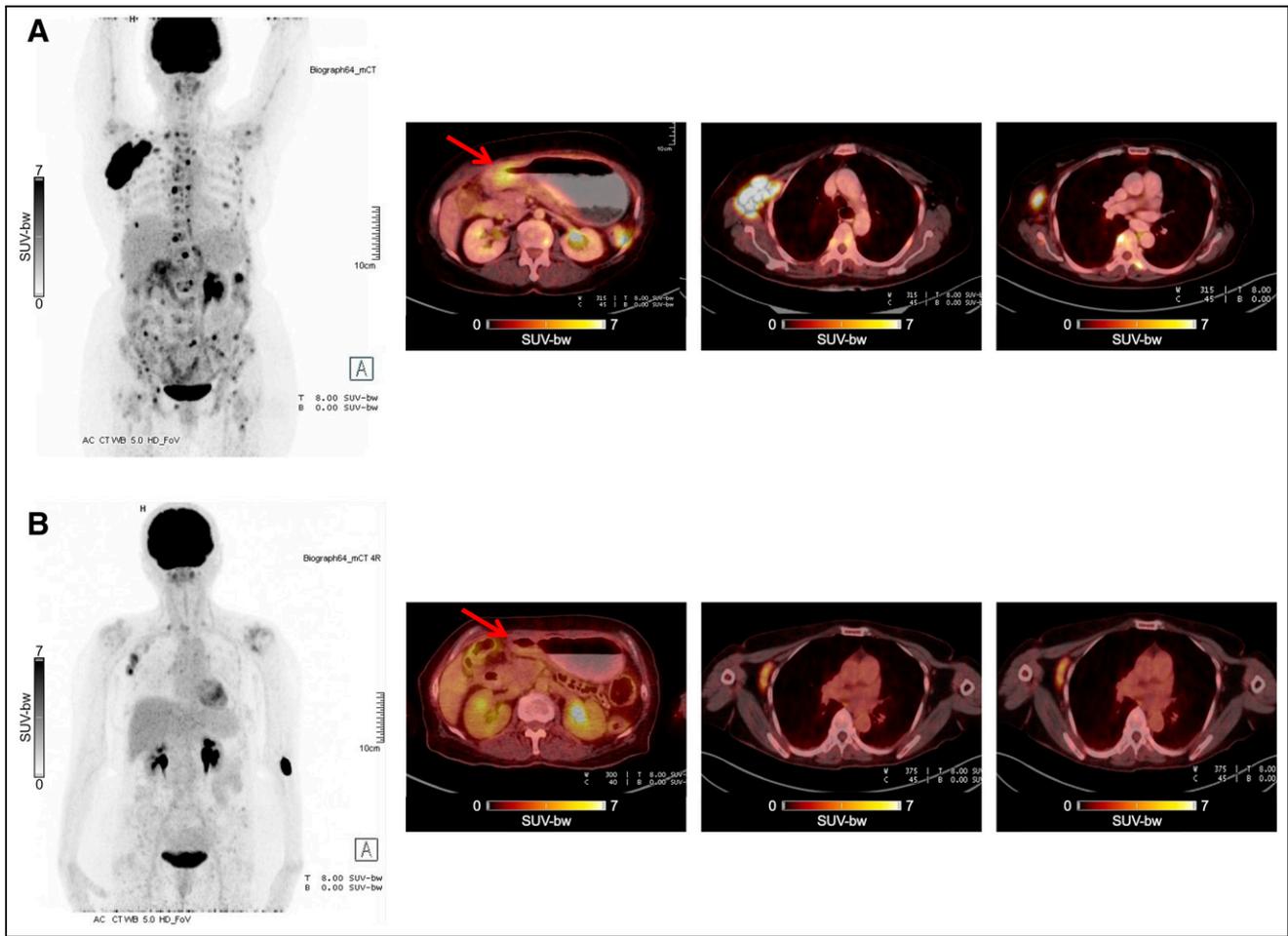


FIGURE 1. (A) Baseline ^{18}F -FDG PET/CT showed gastric, nodal, and osseous metastases. Arrow depicts ^{18}F -FDG-avid lesion involving gastric antrum and pylorus in baseline PET scan, corresponding with uptake over biopsy-proven infiltrative gastric carcinoma. (B) Follow-up scan showed regression of disease. Arrow depicts reduction of ^{18}F -FDG uptake over same site. PET imaging was done on Siemens PET-CT hybrid system equipped with 64-slice CT scanner, with 185 MBq of ^{18}F -FDG intravenously administered; scan was done 60 min after injection with 2 min/bed and 6 imaging beds used for acquisition. Maximum-intensity projection images are shown in baseline and follow-up along with hybrid (PET + CT) images shown in transaxial planes.

breast. Ultrasound with additional mammography showed a highly suggestive mass involving the right breast with extensive axillary lymphadenopathy, features suggestive of category V on the Breast Imaging Reporting and Data System—highly suggestive of malignancy. A core biopsy was performed from the right breast, and the histopathologic study revealed ILC, grade II. The tumor show positive staining for immunohistochemical marker GATA-3 and was negative for CDX2. Similarly, another biopsy from the stomach showed a small focus of infiltrating carcinoma that was also positive for GATA-3, confirming involvement of the stomach by carcinoma of breast origin. Additionally, the metastatic focus in the right axillary lymph nodes showed negative E-cadherin staining, confirming the involvement of this node by ILC originating in the right breast. After comparison of the samples, the final diagnosis was a metastasis of breast carcinoma.

Posttherapy follow-up PET/CT showed a significant interval reduction in lesion size and metabolic activity at the antrum, pyloric canal, and right axillary lymph nodes but no

significant interval change in the size or appearance of the right breast lesion, suggestive of overall disease regression. (Fig. 1B).

DISCUSSION

ILC is the second most common subtype of invasive breast cancer, accounting for about 5%–15% of cases (6,7). In the reported case, the main symptoms were indigestion and upper abdominal pain resulting from pyloric obstruction caused by the gastric mass. The patient underwent upper gastrointestinal endoscopy and biopsy, which revealed a thickened, hard gastric mucosa predominantly involving the distal two thirds of the gastric body with pyloric narrowing, suggestive of gastric outlet obstruction with severe distal diffuse esophagitis. Histopathologic examination revealed a small focus of infiltrating carcinoma. This pattern of metastasis mimics primary adenocarcinoma because it has similar symptoms, imaging and endoscopic features, and histopathologic findings (8).

The patient was considered to have primary gastric cancer and was referred to our hospital for ^{18}F -FDG PET/CT for staging. The PET scan showed mild ^{18}F -FDG avidity in the pyloric antrum with circumferential mural thickening. The sensitivity of PET is reported to be relatively lower for the diagnosis of gastric cancer than for other cancer types, as is attributed to physiologic absorption of ^{18}F -FDG and involuntary movements by the gastric wall. Gastric cancer morphology is also associated with the sensitivity of PET. Although the sensitivity of PET is high for papillary or ductal carcinoma and poorly differentiated solid adenocarcinoma, high false-negative rates are reported for signet ring cell carcinoma and poorly differentiated nonsolid adenocarcinoma (9).

Apart from the gastric metastasis, the PET scan also showed extensive right-sided lymphadenopathy and osseous metastases. The right breast parenchyma showed a superolateral quadrant nodule that was of soft-tissue density and was not ^{18}F -FDG-avid. The patient underwent a workup for primary breast carcinoma, and histopathology revealed ILC, grade II, with right axillary tumor metastasis. Immunohistochemistry findings confirmed the primary breast carcinoma with axillary and gastric metastases. Importantly, gastric metastasis from invasive lobular breast carcinoma is reported to occur at a higher rate than the metastasis from invasive ductal carcinoma. A detailed immunohistochemical analysis can be of great help. O'Connell et al. compared immunohistochemical results between gastric metastases from breast cancer and gastric metastases from primary gastric cancer (10).

Posttherapy follow-up PET/CT showed a significant reduction in nodal, gastric, and osseous metastases.

CONCLUSION

Cases such as the reported one—ILC of the breast with nodal, gastric, and osseous metastases—can be misdiagnosed

as primary gastric cancer. Accurate diagnosis and patient-tailored treatment can be achieved through clinical suspicion, repeated endoscopy, and accurate histologic examination, including disease-specific immunohistochemical analysis. Distinguishing primary gastric adenocarcinoma from metastatic breast ILC is essential, considering that the 2 diagnoses lead to divergent treatments.

DISCLOSURE

No potential conflict of interest relevant to this article was reported.

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